

The High Elevation Red Oak Forest here has a mature canopy of red oak (*Quercus rubra*), mixed with hickories (*Carya* spp.) and a variety of other canopy and understory trees including Fraser's magnolia (*Magnolia fraseri*), cucumber magnolia (*M. acuminata*), black birch (*Betula lenta*), and silverbell (*Halesia tetraptera*). One form of this forest has a well-developed shrub layer with upland highbush blueberry (*Vaccinium simulatum*) and hydrangeas (*Hydrangea radiata* and *H. arborecens*). A carpet of rich and mesic forest herbs covers the ground layer, such as black cohosh (*Cimicifuga racemosa*), broad beech fern (*Phegopteris hexagonoptera*), sarsparilla (*Aralia racemosa*), bellwort (*Uvularia sessilifolia*), water-leaf (*Hydrophyllum canadense*), sunflowers (*Helianthus* spp.), rattlesnake fern (*Botrychium virginianum*), and silvery spleenwort (*Deparia acrostichoides*). Horse gentian (*Triosteum aurantiacum*) and veiny vetchling (*Lathyrus venosus*) were both found in this community and few other areas surveyed in Transylvania County.

High Elevation Red Oak Forest with a heath-dominated shrub layer and a canopy of red oak mixed with chestnut oak (*Q. montana*) tends to occur on south and southeast facing slopes and is drier than the previously described variety of this natural community. The presence of hemlocks (*Tsuga canadensis* and *T. caroliniana*), dense stands of buckberry (*Gaylussacia ursina*), evergreen heath shrubs, and a sparse herb layer are the principal vegetation features that distinguish this forest from the similar red oak community described above.

Chestnut Oak Forest mixes with High Elevation Red Oak Forest on ridges and southeast-facing slopes at lower elevations on Bald Rock and Rocky Face Mountain. These forests are similar to heath-dominated High Elevation Red Oak Forest but have a canopy of chestnut oak with scarlet oak (*Q. coccinea*), and black gum (*Nyssa sylvatica*) sub-dominant. A fairly dense understory/shrub layer is present and consists of sassafras (*Sassafras albidum*), rosebay rhododendron (*Rhododendron maximum*), mountain laurel (*Kalmia latifolia*), fetterbush (*Leucothoe recurva*), blueberries, and huckleberries. Herbs are scarce except for occasional clumps of Biltmore carrion-flower (*Smilax biltmoreana*) and galax (*Galax urceolata*). A timber rattlesnake (*Crotalus horridus*) was observed foraging in an opening on the edge of this community.

Montane Acidic Cliffs are scattered on steep rocky upper slopes within the matrix of High Elevation Red Oak Forest and cove forests. Vines such as pipevine (*Aristolochia macrophylla*) and Virginia creeper (*Parthenocissus quinquefolia*) scramble up the cliffs. The base of the cliff-face is covered with a thick grove of hawthorn (*Crataegus* sp.) in places. Grottoes are dominated by downy alumroot (*Heuchera villosa*), grotto alumroot (*H. parviflora*), maidenhair spleenwort (*Asplenium trichomanes*), and patches of gametophytic Appalachian shoestring fern (*Vittaria appalachiana*) and grotto felt (*Trichomanes intricatum*). Other ferns, such as mountain spleenwort (*Asplenium montanum*), Appalachian polypody (*Polypodium appalachium*), and marginal wood-fern (*Dryopteris marginalis*), cover rocks and cliff-bases. An extensive population of Biltmore sedge and granite dome bluet (*Houstonia longifolia* var. *glabra*) occur in these cliffs and along their bases.